Moving Forward Together . . .

SMART 2001 CONFEREES EMPHASIZE COLLABORATION

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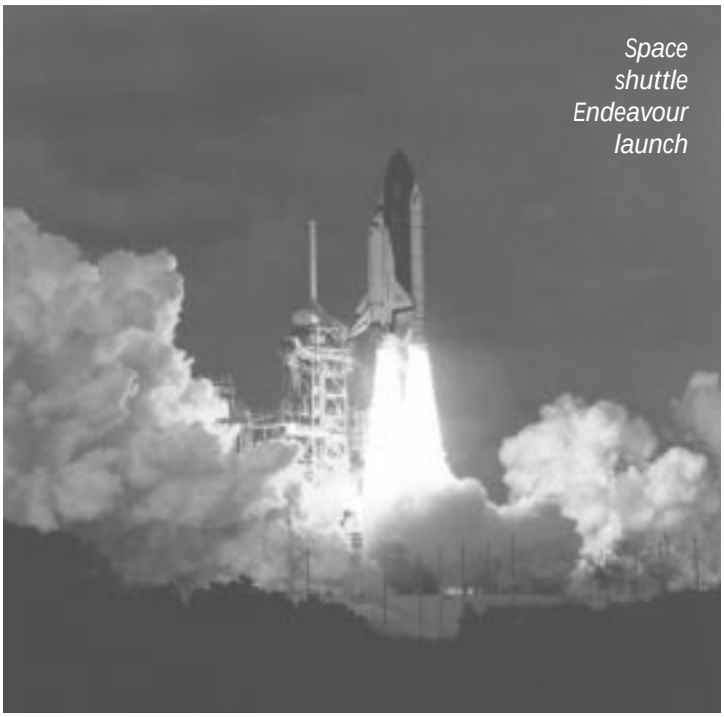

Space shuttle Endeavour launch

Introduction

More than 700 members of the acquisition, requirements, and operational communities convened in Orlando, FL, April 16-19, 2001, for the 4th Annual Simulation and Modeling for Acquisition, Requirements and Training (SMART) Conference. Sponsored by the U.S. Army Model and Simulation Executive Council (AMSEC), the conference provided an opportunity for the Army leadership and other government and industry representatives to showcase the potential benefits of SMART, update attendees on the status of implementing SMART, and foster collaboration throughout the modeling and simulation (M&S) community. The theme was "Facing The Digital Frontier Together." Various M&S tools and technologies used or under development by the Army, NASA, industry, and academia were demonstrated to stimulate greater cooperation.

This year's conference featured 4 discussion panels, 6 breakout sessions, more than 60 conference exhibits, state-of-the-art technology demonstrations, a tour of M&S facilities at the Kennedy Space Center (KSC), and a viewing of a shuttle launch. Conference highlights follow.

Tutorials

A new feature added to this year's gathering was the presentation of tutorials on the afternoon prior to the formal start of the conference. The purpose was to address topics not specifically covered during the formal proceedings. Tutorial topics were *SMART and DOD Acquisition Issues; Measuring and Enabling Cultural Shifts; Advanced Concepts, Simulation Support Plans and SMART*; *What SMART Means for Acquisition; Incorporating SMART Into Military Training;* and *SMART Case Study.*

LTC Marion Van Fosson (standing) moderates the FCS Panel. Other panel members left to right are Ellen Purdy, Dr. Scott Fish, and Donna K. Vargas.

Panels

AMSEC Panel. Members were LTG Paul J. Kern, Military Deputy (MILDEP) to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT); Walter W. Hollis, Deputy Under Secretary of the Army for Operations Research; LTG Larry R. Ellis, Army Deputy Chief of Staff for Operations and Plans; and Dr. Craig E. College, Assistant Deputy Chief of Staff for Programs, Office of the Army Chief of Staff.

Kern directed his comments to how SMART is enabling the Army's transformation. Specifically, Kern said that M&S will help us develop the objective force more quickly by making collaboration easier and exploration of alternative designs possible. He added that M&S allows for design trade-offs, increases the opportunity for testing, and allows the Army to build more virtual prototypes. Kern also noted that M&S challenges all of us to do things differently and better. (Refer to the brief sidebar article below for additional comments on SMART by LTG Kern.)

Hollis focused on simulation and the test community. There are many new opportunities for simulation, specifically with respect to live-fire testing and vulnerability, he said. Hollis added that computer use, new capabilities, and networking have awakened the interests of many and made simulation a major endeavor.

Keynote speaker
LTG William P. Tangney

Speaking from the operator's perspective, Ellis emphasized that the current Army structure lacks strategic responsiveness and is not well-suited for full-spectrum operations. He said the Army must change how it operates and trains, how it designs its force, and how it acquires new equipment. M&S can help us do this, he added. Simulations and simulators are critical force enablers and will be even more critical in fielding the Future Combat Systems (FCS), he stressed. Ellis noted that the Army must plan now for simulations and simulators for the objective force, concluding that SMART is the vehicle to make it happen.

College outlined the Army's current research effort and called for integrating technology prowess into business processes and other Army activities. He also noted that M&S will more than likely need to be addressed within today's constrained budget.

Army Panel. Members were LTG Charles S. Mahan Jr., Army Deputy Chief of Staff For Logistics; LTG Peter M. Cuviello, Army Director of Information Systems for Command, Control, Communications and Computers; MG James Snider, U.S. Army Materiel Command Deputy Chief of Staff for

Kern On SMART

When LTG Paul J. Kern, MILDEP to the ASAALT and Director, Army Acquisition Corps, was first briefed on the DOD concept of simulation based acquisition, he not only endorsed the concept, he took ownership for the Army. Kern has since been instrumental in helping to institutionalize the SMART concept. During an informal interview with a few individuals from the media at the SMART 2001 Conference in Orlando, FL, Kern discussed some of the key aspects of SMART today. On the subject of training, Kern said that one of the challenges has always been finding the time to have our soldiers adequately prepared to use a new piece of equipment. Engineers developing networks of equipment intensify that challenge today. Kern noted that the Army must get soldiers involved early in the development process to help them understand this new concept of networked systems and to get engineers to understand the soldiers' view of the environment in which they're going to operate.

On the importance of SMART in the objective force, Kern noted the multitude of platforms to be developed. The use of simulation is going to allow us to link those platforms and evaluate how they are going to work as a team in the field before they're ever built. He added that we are able to do a lot more training through simulation.

On NASA's role in SMART, Kern stated that NASA's use of simulation in harsh environments to teach people to do complicated tasks matches the Army's view of development training cycles. It just makes good sense, he added, to get together with NASA and leverage one another's work.

Kern concluded the interview with a challenge—to bridge the generation gap. He emphasized the importance of ensuring that the engineering, training, and operational expertise of veteran Army employees is passed on to newer employees.

Inside the Space Station Processing Facility

Research, Development and Acquisition; and BG Nick Grant, Special Assistant to the Army Deputy Chief of Staff for Intelligence.

Mahan opened this panel by noting that SMART's role in logistics transformation is vital. He called on the logistics and SMART communities to develop more realistic tools that enhance strategic responsiveness, meet deployment timelines, reduce the combat zone footprint, and reduce logistics costs without sacrificing warfighting capability.

Cuviello examined transforming the SMART process with information technologies. He discussed the virtual work environment, which he says will provide a shared work environment, build a collaborative environment to reduce developmental test costs, and reduce software development cycle time.

Snyder described his simulation experiences with the National Test Facility Strategic Defense Initiative Simulation, the Comanche, and force-on-force evaluations.

Grant presented an overview of Army intelligence, surveillance, and reconnaissance and outlined its strong link to the SMART world. SMART, Grant said, is the methodology that keeps us on the path to meet Army transformation goals on time.

FCS Panel. Members were LTC Marion Van Fosson, FCS Program Manager; Ellen Purdy, Manager for Test, Analysis, Modeling and Simulation, FCS Program Management Office; Dr. Scott Fish, Program Manager, Defense Advanced Research Projects Agency (DARPA) Tactical Technology Office; and Donna K. Vargas, Director of Operations, U.S. Army Training and Doctrine Command (TRADOC) Analysis Center, White Sands Missile Range, NM.

Van Fosson indicated that FCS could be viewed as the prototype for future Army systems and acquisition strategies. He noted also that FCS developers could apply SMART concepts to achieve FCS objectives, and that M&S can be a major contributor in defining FCS concepts. He concluded that FCS will have implications for the objective force by enabling a wide range of military operations.

The FCS Program, Purdy said, is an opportunity for the Army to apply the SMART concept at the outset. Applying the tenets of the SMART concept, specifically M&S, is one of the strategies that will allow the program to mature from a concept to first unit equipped before the end of the decade.

Fish gave an overview of the Unmanned Ground Combat Vehicle and Perception for Off-Road Robotics (PerceptOR) Programs, two jointly funded DARPA-Army efforts supporting FCS technology related to robotics. Both programs, Fish said, generate critical data to support model development related to unmanned ground vehicle use by the military.

Vargas discussed the use of legacy systems in FCS development. Two models, Janus and CASTFOREM, are currently accepted for Army force-on-force studies. Vargas compared the models' routine use for analysis and their application in the FCS concept development phase.

Industry Panel. Members were Jim Malicki, Product and Analysis Solution Leader, IBM Virtual Product Innovation; Scott Curtis, Principal Investigator and Manager, Strategic Technology Initiative, Lockheed Martin Space Systems Co.; and Dave Koshiba, Program Manager, Boeing Phantom Works Lean and Efficient Define and Produce Programs.

Malicki discussed IBM's concept of "e-business," a new approach to products and services that emphasizes innovation—cycle time, speed, globalization, enhanced productivity, and knowledge sharing across the extended enterprise—intended to help differentiate IBM from its competitors.

Curtis discussed various M&S tools currently used by Lockheed Martin Corp. to achieve program cost and schedule savings. These include applications such as virtual pathfinders, visual work instructions, engineering collaborations, virtual testing, and immersive environments.

Koshiba described Boeing's "lean and efficient" processes and tools, which enable affordability-based decisions and reduce both design and build-cycle times and costs. Physical prototypes, said Koshiba, are becoming rare and manufacturing prototypes are being reduced or eliminated altogether.

Keynote Address

LTG William P. Tangney, Deputy Commander in Chief, U.S. Special Operations Command (USSOCOM), provided a keynote address on his command's approach to M&S.

SOCOM's approach is particularly challenging because of its warfighting responsibilities, which include counterproliferation of weapons of mass destruction, combating terrorism, and unconventional warfare. Tangney noted that the M&S goal of all the Services is to have full, jointly distributed, collaborative systems that provide a mission planning and rehearsing capability linked to simulators, one in which soldiers, sailors, and airmen alike can rehearse courses of action and mission profiles.

Tangney concluded that SOCOM is at the point where it can truly do a joint, collaborative, distributed exercise that allows rehearsal of a combat operation or a training exercise regardless of the specific objective, and do it in real time in a virtual, constructive environment.

Guest speaker Michael Schrage

Invited Speakers

BG Stephen M. Seay, Commanding General, U.S. Army Simulation, Training and Instrumentation Command (STRICOM). Seay spoke on STRICOM's role in the Army transformation, focusing on the command's enduring support across all three SMART domains: research, development, and acquisition (RDA); advanced concepts and requirements (ACR); and training, exercises, and military operations (TEMO).

In particular, Seay outlined some STRICOM science and technology initiatives including live simulation technology, advanced distributed simulation technology, medical simulation technology, and intelligent agents to make soldiers in the field more effective. He added that the training devices and simulations supporting these initiatives are a real step forward.

LTG Joseph M. Cosumano Jr., then *Director, Objective Force Task Force.* The Army's transformation to an objective force is a very significant challenge for both the M&S and acquisition communities, according to Cosumano, but one that is mandated by the unpredictability of future military operations. The Objective Force Task Force, which is comprised of Army military and civilian personnel from the Army Secretariat, oversees activities geared toward achieving the objective force. Cosumano stressed that today's Army can't maintain overmatch capability with the current structure and equipment. Heavy forces do not deploy quickly, light forces lack staying power, asymmetrical warfare is a real threat, and there are significant resource challenges to get obsolescent equipment up to a half-life. Developing doctrine and materiel solutions specifically oriented to FCS is the key.

The State Of SMART

SMART is becoming more than just a cornerstone of how the Army transformation is going to occur, said W.H. (Dell) Lunceford Jr., Director, Army Model and Simulation Office, in his progress report on the SMART concept. SMART, he added, is more than the application of M&S; it's a wide range of information technologies such as integrated digital environments. Lunceford also stressed that although more and more people are using simulation to solve problems, we have not yet reached a point where SMART is institutionalized as a fundamental way to do business. Lunceford discussed key advancements made since the SMART 2000 Conference:

• The SMART Execution Plan has been approved. The plan lays the groundwork for how the Army will institutionalize SMART as the means of modernizing and contributing to the Army transformation.

• Based on a recommendation to move the SMART mission out of the RDA domain and give it wider applicability, the four AMSEC co-chairs assumed sponsorship of SMART, and AMSO was designated the executive agent to foster the SMART process and take ownership of the SMART mission and concept.

• The Army Materiel Command's Research, Development and Engineering Center (RDEC) Federation has made significant progress during the past year. The Army is starting to institutionalize the culture of sharing and interacting with other Services and with its own organizations.

• In the M&S standards arena, high level architecture is moving forward and the Army continues to strongly support it and the concept of linking simulations in federated environments as a way of sharing expertise.

• The Army continues to build a standard set of simulations. However, they're very large, complex, time consuming, and are often beyond the scope of a single program manager. On the positive side, Lunceford said that several simulations such as AWARS, Combat XXI, and OneSAF are starting to be used across domain environments such as the training, analysis, and RDA communities.

• The Army has established a career field for simulation (FA57), and interest in establishing professional certification for simulation careerists is gaining momentum.

Recipients of AMSEC Certificates of Excellence (left to right) are Brenda Klafter, Myron Holinko, LTC Jeffrey Applegate, MAJ James Illingworth, and Ellen M. Purdy. A photo of Frank Joseph Henry was not available.

In conclusion, Lunceford said the SMART Conference will continue to serve as the focal point for SMART initiatives and for building the SMART culture.

SMART 2001 Dinner

Michael Schrage, a widely published journalist and management expert and author of *Serious Play: How The World's Best Companies Simulate To Innovate*, was this year's dinner speaker. *Serious Play* explores the high-tech ways that the commercial sector is using virtual prototyping to change the way it does business. Schrage said that models, prototypes, and simulations are becoming the common denominators that enable collaboration within the Army. The classic, Western belief that M&S is used to get a better understanding of a problem to be solved is only partially true. Rather, Schrage said, M&S provides a better understanding of ourselves and the trade-offs we may need to consider. New economics are forcing us to re-evaluate traditional practices such as specification-driven prototypes. Instead, Schrage says, models can drive the specifications. SMART, he concluded, is an important first step in rediscovering the core values that preserve the dignity and integrity of individuals and institutions. (See book review on Page 56 of this magazine.)

At the conclusion of the dinner, AMSEC Certificates of Excellence were awarded to the following individuals for advancing the SMART concept:

Brenda Klafter, Office of the Project Manager, Signals Warfare, was cited for her support to the Airborne Common Sensor Program and her efforts in developing a realistic synthetic environment that will allow program concepts to be assessed virtually.

Myron Holinko, U.S. Army Communications-Electronics Command (CECOM), was recognized for introducing numerous SMART initiatives into CECOM technology programs, and for organizing the SMART 2000 Seminar at Fort Monmouth, NJ.

LTC Jeffrey Applegate and *MAJ James Illingworth,* TRADOC Analysis Center-Monterey, were credited for their support to the Dismounted Simulation and Acquisition System. Their efforts led to development of an individual and collective virtual training tool, as well as a mechanism for feedback on the Land Warrior System.

Frank Joseph Henry, National Simulation Center, was cited for supporting the Digital Battlestaff Sustainment Trainer. His work culminated in the success of the Synthetic Training Environment for the Joint Contingency Force Advanced Warfighting Experiment.

Ellen M. Purdy, Office of the PM, FCS, won praise for her extraordinary contributions toward the development and implementation of the SMART concept. She was responsible for all aspects of promulgating SMART throughout the Army.

Breakout Sessions

Six breakout sessions were held to generate more detailed discussions on the SMART concept and its impact on the Army transformation. The following topics were addressed: *Standards, Building A Business Model for SMART, Virtual Concepting, Immersive Planning and Training,* and *M&S Technology and Tools.*

KSC And Shuttle Launch

Two of the most memorable highlights of this year's SMART Conference were a behind-the-scenes tour of KSC and the launch of the space shuttle Endeavour. The KSC tour included stops at the Apollo Saturn V Center and the Space Station Processing Facility, the latter at which actual hardware for space station missions is built and assembled. Part of the group also toured M&S facilities and heard NASA Administrator Daniel S. Goldin address the significance of Endeavour's mission to the International Space Station.

Following a trouble-free countdown under a brilliant Florida sunshine, Endeavour was launched from KSC at 2:41 p.m. amid a roll of thunder and riding a pillar of flame. Observers watched from approximately 6 miles away as Endeavour lifted off Pad A at Launch Complex 36, gained altitude, separated from its solid-rocket boosters, and climbed into Earth's orbit for one of its most complex space station missions to date.

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